

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Date: Thursday, December 20, 2018

Independence D30-711 Production

Job Date: Saturday, December 15, 2018

Sincerely,

Adam McKay

Legal Notice

Disclaimer:

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Independence D30-711** cement **Production** casing job. A pre-job safety meeting was held before the job where details of the job were discussed, potential safety hazards were reviewed, and environmental compliance procedures were outlined.

Halliburton maintains a continuous quality improvement process and appreciates any comments or suggestions that you may have. Halliburton again thanks you for the opportunity to perform service work on this well. We hope to be your solutions provider for future projects.

Respectfully,

Halliburton [Ft. Lupton]

The Road to Excellence Starts with Safety

Sold To #: 345242		Ship To #: 3902742		Quote #:		Sales Order #: 0905339436					
Customer: NOBLE ENERGY INC-EBUS						Customer Rep: Gary stapleton/ Chris Ewing					
Well Name: INDEPENDENCE				Well #: D30-711		API/UWI #: 05-123-47706-00					
Field: WATTENBERG		City (SAP): LA SALLE		County/Parish: WELD		State: COLORADO					
Legal Description: NE NE-19-3N-64W-300FNL-1045FEL											
Contractor: H & P DRLG				Rig/Platform Name/Num: H & P 517							
Job BOM: 7523 7523											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HB70026				Srv Supervisor: Kamereon White							
Job											
Formation Name											
Formation Depth (MD)		Top				Bottom					
Form Type					BHST	230 degF					
Job depth MD		17795ft			Job Depth TVD						
Water Depth					Wk Ht Above Floor		4'				
Perforation Depth (MD)		From				To					
Well Data											
Description	New / Used	Size in	ID in	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD ft	Top TVD ft	Bottom TVD ft	
Casing		9.625	8.921	36			0	1946	0		
Casing		5.5	4.778	20			0	17795	0		
Open Hole Section			8.5				2500	6710			
Open Hole Section			8.5				6710	17754			
Tools and Accessories											
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make		
						Top Plug	5.5	1	HES		
Float Shoe	5.5	1	HES	17735.4		Bottom Plug	5.5	2	HES		
Float Collar	5.5	1	HES	17687.2							
Fluid Data											
Stage/Plug #: 1											
Fluid #	Stage Type	Fluid Name			Qty	Qty UoM	Mixing Density lbm/gal	Yield ft³/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
1	11.5 lb/gal Tuned Spacer III	Tuned Spacer III			120	bbl	11.5	3.78	23.5		

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
2	ElastiCem	ELASTICEM (TM) SYSTEM	140	sack	13.2	1.68		6	8.04	
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
3	ElastiCem w/ SCBL	ELASTICEM (TM) SYSTEM	435	sack	13.2	1.68		6	8.06	
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
4	NeoCem NT1	NeoCem TM	1249	sack	13.2	2.04		8	9.75	
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
5	Displacement	Displacement	392	bbl	8.33					
Cement Left In Pipe		Amount	48 ft		Reason			Shoe Joint		
Mix Water:		pH 7	Mix Water Chloride:			< 500 ppm		Mix Water Temperature:		76 °F
			Plug Displaced by:			8.4 b/gal				
Plug Bumped?		Yes	Bump Pressure:			1950 psi		Floats Held?		Yes
Cement Returns:		0 bbl	Returns Density:			9.4 lb/gal				
Comment										

2.0 Real-Time Job Summary

2.1 Job Event Log

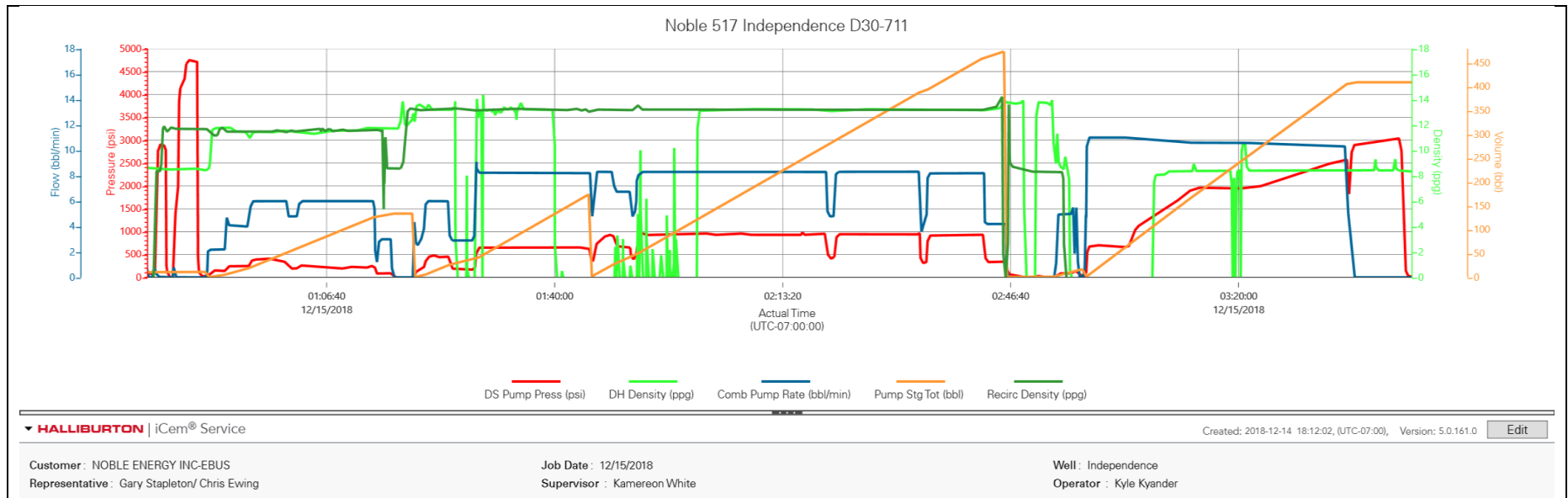
Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DS Pump Press (psi)	Comb Pump Rate (bbl/min)	Recirc Density (ppg)	Comments
Event	1	Assessment Of Location Safety Meeting	Call Out	12/14/2018	10:30:00	USER				Crew called out and was requested to be on location @ 1630.
Event	2	Depart Yard Safety Meeting	Depart Yard Safety Meeting	12/14/2018	14:20:00	USER				Crew discussed the route of travel and supervisor called in a journey.
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	12/14/2018	14:30:00	USER				Crew left the yard.
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	12/14/2018	15:00:00	USER				Crew arrived on location early and the rig was running casing.
Event	5	Assessment Of Location Safety Meeting	Safety Meeting - Assessment of Location	12/14/2018	15:10:00	USER				Spotting in trucks and supervisor met with the customer and got the well information. TD-17,754' TP-17735.4' SJ-48.2' FC-17,687.2' Cas-5.5" 20# P110 PC-9.625" 36# Set @ 1946' Mud Weight-9.4 ppg OBM,TVD-7021' OH-8.5."
Event	6	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	12/14/2018	15:15:00	USER				Discussed rig up procedure and signed the JSA.
Event	7	Rig-Up Equipment	Rig-Up Equipment	12/14/2018	15:20:00	USER				Rigged up all HES equipment and lines.
Event	8	Rig-Up Completed	Rig-Up Completed	12/14/2018	16:30:00	USER				All HES equipment and lines rigged up safely.
Event	9	Casing on Bottom	Casing on Bottom	12/14/2018	23:00:00	USER				Casing on Bottom with the landing Joint.
Event	10	Pre-Job Safety Meeting	Pre-Job Safety Meeting	12/15/2018	00:15:00	USER				Discussed the job procedure and pressures with all personnel involved with the cement job.
Event	11	Start Job	Start Job	12/15/2018	00:32:33	COM4				Start recording Data.
Event	12	Drop Bottom Plug	Drop Bottom Plug	12/15/2018	00:32:38	COM4				Customer and Halliburton Rep witnessed the first bottom plug being loaded and pushed down into the casing with the CRT.
Event	13	Other	Other	12/15/2018	00:39:04	COM4				Filled the lines with 3 bbls of water 3 bpm 160 psi.
Event	14	Test Lines	Test Lines	12/15/2018	00:41:24	COM4	2918.00	8.61	11.30	Tested the rigs IBOP to 3000 psi and held for 1 min no leaks.

Event	15	Test Lines	Test Lines	12/15/2018	00:46:17	COM4	4731.00	8.58	11.67	Tested the EKO's To 500 psi and they worked, then we performed a high psi test to 4500 psi and held for 2 min no leaks, 5th gear stall out psi was 1950 psi. Also the rig rotated the casing during the entire cement job @ 18-20 RPM.
Event	16	Pump Spacer 1	Pump Spacer 1	12/15/2018	00:49:08	COM4	146.00	11.74	2.10	Pumped 120 bbls of tuned spacer with musol A and Dual B added throughout, 6 bpm 215 psi.
Event	17	Check Weight	Check Weight	12/15/2018	00:55:47	COM4				Checked the weight of the spacer with the pressurized mud scales, scaled @ 11.5 ppg.
Event	18	Shutdown	Shutdown	12/15/2018	01:16:14	COM4				Shutdown after spacer to bleed the psi off to the wash up tank to load the second bottom plug.
Event	19	Drop Bottom Plug	Drop Bottom Plug	12/15/2018	01:17:24	COM4				Both the customer and Halliburton Rep witnessed.
Event	20	Check Weight	Check Weight	12/15/2018	01:18:44	COM4			13.47	Checked the weight of the Cap Cement with the pressurized mud scales, scaled @ 13.2 ppg.
Event	21	Pump Cap Cement	Pump Cap Cement	12/15/2018	01:19:15	COM4	172.00	13.14	13.10	Pumped 42 bbls of Cap Cement @ 13.2 ppg 1.68 yield 8.04 gal/sk (140 sks) 6 bpm 470 psi.
Event	22	Pump Lead Cement	Pump Lead Cement	12/15/2018	01:30:00	USER	660.00	8.20	13.24	Pumped 130 bbls of Lead cement @ 13.2 ppg 1.68 yield 8.06 gal/sk (435 sks) 6 bpm 580 psi. HES HPVT cable was having issues with the density on the flecs screen the density dropped off and wasn't reading and came back on and off for the entire cement job.
Event	23	Check Weight	Check Weight	12/15/2018	01:31:36	COM4	682.00	8.20	13.24	Checked the weight of the Lead Cement with the pressurized mud scales, scaled @ 13.2 ppg.
Event	24	Pump Tail Cement	Pump Tail Cement	12/15/2018	01:45:06	COM4	602.00	8.20	13.13	Pumped 454 bbls of Tail Cement @ 13.2 ppg 2.04 yield, 9.75 gal/sk (1249 sks) 8 bpm 970 psi.
Event	25	Check Weight	Check Weight	12/15/2018	01:46:47	COM4	815.00	8.30	13.26	Checked the weight of the Tail Cement with the pressurized mud scales, scaled @ 13.2 ppg.
Event	26	Pump Shoe Cement	Pump Shoe Cement	12/15/2018	02:45:46	COM4				Pumped a 13.5 ppg 1 bbl shoe track.
Event	27	Shutdown	Shutdown	12/15/2018	02:46:05	COM4				Shutdown to blow air back through the lines to the wash up tank,
Event	28	Drop Top Plug	Drop Top Plug	12/15/2018	02:52:51	COM4				Both the customer and Halliburton Rep witnessed.
Event	29	Clean Lines	Clean Lines	12/15/2018	02:53:03	COM4				Cleaned the pumps and lines.

Event	30	Pump Displacement	Pump Displacement	12/15/2018	02:57:25	COM4	685.00	11.00		Pumped calculated displacement, during displacement the rig was rotating the casing @ 18-20 RPM , torque was gradually starting to fall of towards the end of displacement torque came down to 600.
Event	31	Displ Reached Cement	Displ Reached Cement	12/15/2018	03:04:30	COM4				@ 70 bbls away we caught the plug and maintained 11 bpm.
Event	32	Bump Plug	Bump Plug	12/15/2018	03:37:51	COM4	1797.00	8.38	5.10	Bumped the plug on calcaulted displacement, the final circulating psi was 1950 psi and took 500 psi over to 2500 psi and shutdown, psi gained 300 psi.
Event	33	Other	Other	12/15/2018	03:43:27	COM4				Waited 5 min before we checked the floats, the floats held and we got 5 bbls back to the truck.
Event	34	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	12/15/2018	03:45:00	USER				Crew held a safety meeting discussing the rig down and flush stack procedure. Also all potential hazards associated with rigging down all HES equipment and lines.
Event	35	End Job	End Job	12/15/2018	03:46:43	COM4				Cement job complete, calculated tops of cements and spacer. TOTC-6634' TOLC # 2-3448' TOCap-1541' TOS-964' No cement or spacer back to surface.
Event	36	Rig Down Lines	Rig Down Lines	12/15/2018	03:50:00	USER				The crew blew down the rigs top drive and standpipe with air and rigged down all HES equipment and lines.
Event	37	Rig-Down Completed	Rig-Down Completed	12/15/2018	04:30:00	USER				Rig down completed no one got hurt.
Event	38	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	12/15/2018	04:50:00	USER				The crew held a pre journey safety meeting discussing the route and potential hazards while driving. The supervisor called in a journey.
Event	39	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	12/15/2018	05:00:00	USER				Kamereon White and crew would like to thank you for your business and choosing Halliburton Cement. If you have any questions please feel free to call.

3.0 Attachments

3.1 Cement Job Without Events .png



3.2 Cement Job with Events .png

